

## Description

Clysar® LTCL (Lowest Total Cost Low-Energy) shrink film is a thin-gauge, clear, biaxially oriented, heat-shrinkable polyolefin film. This film has the lowest shrink force of any LTC option.

# Clysar® LTCL Film

DATA SHEET

## Uses

Clysar® LTCL is designed for the packaging of lightweight, low-abuse, thin or delicate products like filters, office papers or magazines. It combines excellent optics and seal strength with the economics of high yield, reduced changeover and downtime, and greater use of storage space.

## Significant Features

### Sealing

- Provides strong, durable seals with all sealing systems, including wires, knives and electrostatic overlap.
- Has a wider sealing temperature range than most other thin-gauge films.
- Requires little or no cooling dwell.
- Seals do not become brittle with age.
- Does not corrode sealing wire or equipment.
- Does not leave a carbon deposit on sealing wires.
- Pinhole-free seals.

### Shrinking

- Good burn-through resistance.
- Forgiving under less-than-optimum tunnel conditions.
- Compatible with all air evacuation systems. Pin perforation requires a backup roller or very sharp pins, or the film may stretch and not perforate over the pins.
- Average available shrinkage.
- Balanced shrinkage.

### General

- Good tear resistance. More resistant than most other thin-gauge films.
- High gloss, clarity and sparkle.

### Shipping

- LTCL films will be packaged in corrugate-free packaging (efficiency or cradle pack) to support sustainability throughout the supply chain.

### Standard Put-Ups

- Flat film is available as Clysar® LTCL. It is offered in widths from 5" to 68" in 1/2" increments.
- Folded film is available as Clysar® LTCLF in widths from 5" to 47" in 1/2" increments.
- Surface treatment for improved hot slip is offered as Clysar® LTCLS for flat film or Clysar® LTCLSF for folded film.
- Folded film will have approximately half the linear footage of flat film for same gauge and roll dimensions.
- Film is wound on 3" and 6" cores to the standard roll sizes as shown in Table 1.
- Perforation is optional for folded film only.



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# Clysar®

## FDA/USDA Status

Clysar® films sold by Clysar, LLC, for food packaging use comply with U.S. Food and Drug Administration (FDA) requirements under the Federal Food, Drug and Cosmetic Act as amended. Clysar complies with FDA regulation 21 CFR 177.1520—Olefin polymers, allowing use for articles that contact food, except for articles used for packing or holding food during cooking.

## Use

Clysar, LLC, does not recommend heating or cooking foods in Clysar® films. High temperature, high speed, heat sealing of polyolefin shrink films will release small amounts of “smoke,” which should be removed by adequate ventilation in normal commercial practice.

## Disposal

Preferred options for disposal are: (1) recycling, SPI Code—Class 7; (2) incineration with energy recovery; and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled.

## Storage

Storage below 32°C (90°F) is recommended. Prolonged exposure to temperatures moderately above 32°C (90°F) or brief exposure to temperatures well above 32°C (90°F) may cause difficulty in unwinding film.

For more detailed information on the safe handling of Clysar® films, a “Safety in Handling and Use” guide or the OSHA Material Safety Data Sheets can be obtained from your Clysar representative.

## Summary of Properties

### Clysar® LTCL - Linear Footage Flat Film (Table 1)

Core I.D., in.	Roll O.D., in.	Gauge
		35
3	11.5	17,500
3	15	35,000
6	12.5	17,500
6	16	35,000

### Typical Properties of Clysar® LTCL (Table 2)

Property	ASTM Test Method	Unit	Gauge
			35
Haze (avg)	D1003	%	2.7
Gloss at 20° (min)	D2457	GU	137
COF, Kinetic	D1894		0.1
Shrinkage, 102°C (216°F)* -- 10 min	D1204	% (area)	60
Shrink Force	D2838	g/in @ 110°C	55
Stiffness Modulus (avg)	D882	kpsi	30
Tensile Strength (avg)	D882	kpsi	9
Elongation (avg)	D882	%	125
Tear Strength (avg) (Elmendorf)	D1922	g	12
Spencer Impact	D3420	lbf	5
WVTR	F1249	g/100 in <sup>2</sup> /24 hr	4.1
Oxygen Transmission	D3985	cc/100 in <sup>2</sup> /24 hr	1100
CO <sub>2</sub> Transmission	D1434	cc/100 in <sup>2</sup> /24 hr	3200

\* Film Temperature

Note: These values are typical for Clysar® LTCL shrink film and are not for use as limiting specifications.

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The technical data contained herein are guides to the use of Clysar® films. The advice contained herein is based upon tests and information believed to be reliable, but users should not rely upon it absolutely for specific applications because performance properties will vary with processing conditions. It is given and accepted at user's risk, and confirmation of its validity and suitability in particular cases should be obtained independently. Clysar makes no guarantees of results and assumes no obligations or liability in connection with its advice. This publication is not to be taken as a license to operate under, or recommendation to infringe, any patents.

CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications, see Clysar Medical Caution Statement, MCS\_02.